

M.Sc. Sem-4 Examination

507

Polymer Science

April 2022

Time : 2-00 Hours]

[Max. Marks : 50

Instructions: All questions in Section- I carry equal marks

Attempt any 3 questions in Section-I

All questions in Section-II are compulsory

Section I (Total-42 marks)			
Q 1	A	What is polymer Testing? Explain the need of standards required for testing along with the examples.	7
	B	Explain the ASTM method to perform flexural test on plastic materials in details and with diagram.	7
Q 2	A	Explain- Kelvin/ Voigt model for flow behaviour of polymeric materials	7
	B	Write a note on Heat deflection temperature.	7
Q 3	A	What is Impact resistance? Write the types of impact tests and explain any 1 in detail with diagram.	7
	B	How are various specimens for polymeric testing prepared? Write a note on various types of samples used in tensile testing.	7
Q 4	A	Explain with the help of stress-strain curve, the nature of different types of polymeric materials (e.g.- brittle, soft, tough etc.)	7
	B	Explain- Maxwell model for flow behaviour of polymeric materials.	7
Q 5	A	Write a note on- ESCR	7
	B	Define Refractive Index. How is refractive index calculated? Explain in detail.	7
Q 6	A	Write a note thermal conductivity of polymers. Explain how thermal conductivity is determined using hot plate method.	7
	B	Write in detail how VSP of a given polymer is calculated.	7
Q 7	A	What is arc? How is arc resistance calculated? Write the factors affecting the test results for same.	7
	B	How are films tested? List the tests performed on a polymeric film and explain each test in short.	7
Q 8	A	Write a note on- Pipe testing	7
	B	Write in detail about- surface and volume resistivity.	7

Section II (Total- 8 marks)		
1	Strain is _____ (a)Change in length/change in volume (b) Change in length/ Original Length (c)Original Length / Change in length (d) Change in Volume/ Original Volume	1
2	Specimen for tensile testing is _____ (a) Disc (b) Square (c) Dumbbell Shape (d) Rectangular	1

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3	ADTM D for Izod Impact Test is _____ (a) 638 (b) 790 (c) 149 (d) 256	1
4	Full form of VSP is _____ (a) Vicat Softening point (b) Vicat softening pressure (c) Vicat strength point (d) Very soft polymer	1
5	Die Diameter of MFI is _____ mm (a) 2.15 (b) 3 (c) 2.095 (d) 3.095	1
6	Arc is a _____ property (a) Mechanical (b) Electrical (c) Thermal (d) Rheological	1
7	The position of dashpot and spring in Maxwell model is _____ (a) Parallel (b) Serial (c) Wheatstone bridge (d) None of the above	1
8	How to check the flow behaviour of PVC? (a) MFI (b) Rheometer (c) Osmometer (d) Viscometer	1

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